provided the next link in the chain, and led Moseley to work on the characteristic x-rays emitted by the elements from calcium to zinc, using Bragg's results on the structure of rock salt to give the absolute wavelength. 'This work established beyond all doubt that the elements could be set out in numerical order according to their nuclear charge.' Darwin remarked that there were two rules for Moseley's work, 'First when you started to set up the apparatus for an experiment, you must not stop until it was set up—second, when the apparatus was set up, you must not stop until the experiment was done'. One of the consequences of this was that Moseley had to acquire a knowledge of where in Manchester one could get a meal at 3 o'clock in the morning.

Andrade gives an interesting account, first of his own work with Lenard in Goettingen and, with it, an interesting contrast of the personal qualities of Lenard with those of Rutherford. He then gives an account of the atmosphere of Rutherford's Laboratory in 1913, and, in particular, of his personal relations with Rutherford. He tells us of the apparent lack of interest in the theory of the nuclear atom until the publication of Niels Bohr's paper two years later in 1913.

Niels Bohr's speech was very brief, but he made a major contribution to the book by reprinting his remarkable Rutherford Memorial Lecture to The Physical Society, delivered in November 1958, on 'Reminiscences of the founder of nuclear science and of some developments based on his work'. The Rutherford Memorial Lectures of H. R. Robinson, A. S. Russell and P. M. S. Blackett are also reprinted, together with nine of the most important original papers of Rutherford and the Manchester school. They add greatly to the value of the volume, which all interested in Rutherford would be delighted to have in their library. The volume will also be of considerable interest to historians of science.

J. D. COCKCROPT

CLERK MAXWELL AND MODERN SCIENCE

Edited by C. Domb

London: Athlone Press. 1963.
Pp. 118. Price 25s.

It has recently been the turn of King's College, London, to recall the centenary of its association with James Clerk Maxwell. The College commemorated the event by a series of six lectures; the book under review is a record of these lectures, which were given in 1962.

The first lecture, by Sir John Randall, covers aspects of Maxwell's life and work, emphasis being naturally thrown on the period during which he worked at King's. Sir John regrets that 'we have such an imperfect picture of Maxwell the man'—but, although it may be imperfect, a strong impression surely emerges from Maxwell's writings and the biography by Campbell and Garnett. Incidentally, Maxwell's 'curious habit' of writing dp/dt as his signature, to which reference is made on page 24, was a joke said to have been invented for Maxwell by Tait, in whose book on thermodynamics appeared the equation $dp/dt = JCM$.

Professor Peierls' lecture on Field Theory since Maxwell is an authoritative survey of the difficulties encountered by modern field theory. Professor Peierls says that there is a mystery about the way in which Maxwell obtained his equations. Does not part of the solution of this mystery (the conception of the displacement current) lie in the fact that Maxwell did not believe that a vacuum was empty? He first saw that the variations of electric displacement in a tangible dielectric constituted a current, and he then extrapolated this conclusion to a vacuum in which, he said, 'there is always enough matter left to transmit the undulations of light and heat', and he accepted from Kelvin's work 'the existence of a medium of small but real density'. Maxwell thus thought of a vacuum as differing only in degree and not in kind from a material dielectric.

Professor Coulson's lecture on Interatomic Forces is an enlightening survey of the present state of this subject, for which many students may be grateful, although Professor Coulson may have set his readers back by saying that Maxwell 'only published 101 papers'! Sir Edward Appleton's happy lecture on Radio and the Ionosphere has the appeal of a first-hand account from a pioneer who through all his heavy administrative and public duties has kept a lively and fruitful research interest. Dr. E. G. Bowen's account of Radio Astronomy and Giant Telescopes is largely concerned with his new 210 ft radiotelescope in Australia, whose figure is so good that 95% of the 700 test points are within 3 mm of a perfect paraboloid surface. This telescope has already shown the existence of Faraday rotation in space affecting the passage of electromagnetic waves on their way from source to observer.

The final lecture was that by Professor R. A. Smith on Maser and Lasers; this is a subject that is developing so rapidly that new results are always available before a lecture gets into print, but Professor Smith's lecture has lasting value for its clarity of exposition of the relevant principles.

R. V. JONES

NEWNES CONCISE ENCYCLOPAEDIA OF NUCLEAR ENERGY

By Advisory Editors: D. E. Barnes, R. Batchelor, A. G. Maddock, J. A. Smedley and Denis Taylor
London: George Newnes Ltd. 1962.
Pp. x + 886. Price 160s.

The compiling of any encyclopaedia worthy of the name is a formidable task; this volume has obviously been no exception. The vital statistics are impressive—886 pages covering topics from A.E.R.E. to zirkelite written by 82 authors and supervised by five advisory editors. The usefulness of the book is not so easy to measure. Clearly it has a lot to do with how up to date the individual articles are. On this score, the writer of the foreword is in no doubt. 'The present encyclopaedia, prepared by a recognized team of experts, has set itself an ambitious aim, and therefore took a long time to prepare, but has been scrupulously kept up to date'. It is a proud claim not wholy substantiated by a random dip into the contents. On 'W-value', p. 860, the only reference is to a review article written by L. H. Gray in 1944. However, in 'Dose', p. 205, written by a different author a modern value for W is used. Another example is 'Geological age', pp. 301–303. This has been compiled almost directly (and incidentally without acknowledgment of the original source) from an excellent review article by S. C. Curran published in 1953. A good deal of information has been gained since then.

The other feature which affects the usefulness of an encyclopaedia is the quality of the editing and here again a